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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/627,355	07/28/2000	Bob L. Mackey	CDST-F102	3572

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EXAMINER

SANTIAGO, MARICELI

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/627,355	Applicant(s) MACKEY ET AL.	
	Examiner Mariceli Santiago	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36,37,39-44 and 52-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36,37,39-44 and 52-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The Amendment, filed on October 14, 2003, has been entered and acknowledged by the Examiner.

Cancellation of claims 10-18, 38 and 45-51 has been entered.

Claim Objections

Claim 57 is objected to because of the following informalities:

In the recitations "a material of a material thickness" and "said material of said material thickness" in lines 2 and 3, respectively, the first instance of "material" appears to be redundant. The Examiner suggests replacing the above recitations with --a material thickness-- and --said material--, respectively.

In line 3, the term "are" fails to conform to standard grammatical rules, instead it should recite "is".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 39 recites the limitation "said electrons" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 36, 37, 39, 40, 42, 43, 44, 53 and 55-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. (US 5,536,993).

Regarding claim 36, Taylor discloses a method for preventing of a FED device (61), the method comprising the step of providing a cathode structure (66) of a FED device, the cathode structure (66) comprising an electron emitting structure (70) above one side thereof, and disposing a substantially continuous barrier layer (64) of substantially uniform thickness over the one side of the cathode structure (66), the barrier layer is configured to limit diffusion of impurities from the substrate to a subsequent layer (Column 6, lines 48-56), i.e., consequently it prevents migration of contaminants into an active region of the FED device.

Regarding claim 37, Taylor discloses a method wherein the cathode structure comprises a cathode substrate (66) of the FED device.

Regarding claim 39, Taylor discloses a method comprising disposing the barrier layer over the cathode structure. In regards of the limitation wherein the barrier layer has a thickness sufficient to prevent substantial penetration of electrons therethrough, Taylor discloses a silicon dioxide barrier layer having a thickness of 50nm, it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents penetration of electrons as evidenced by Taylor's disclosure of all the claimed structural limitations.

Regarding claim 40, Taylor discloses a method wherein the barrier layer selected from the group consisting of silicon dioxide and SiO₂ (Column 7, lines 23-25).

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Regarding claim 42, Taylor discloses a method comprising disposing the barrier layer over the cathode structure, wherein the barrier layer prevents the migration of contaminants from the cathode structure into the field emission display device (Column 6, lines 48-56).

Regarding claim 43, Taylor discloses a method comprising disposing the barrier layer over the cathode structure. In regards of the limitation wherein the barrier layer prevents the migration of sodium from the cathode structure into the field emission display device, Taylor discloses a silicon dioxide barrier layer having a thickness of 50nm, it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents migration of sodium as evidenced by Taylor's disclosure of all the claimed structural limitations.

Regarding claim 44, Taylor discloses a method comprising disposing an electrically conductive barrier layer (79) over the cathode structure (66).

Regarding claim 53, Taylor discloses a FED device comprising means for preventing migration of contaminants (64) from a cathode structure (66) into an active region of the FED device (Column 6, lines 48-56).

Regarding claim 55, Taylor discloses a FED device wherein the preventing means comprises a substantially continuous barrier layer (64) of substantially uniform thickness between the cathode structure and plurality of cathode emitters (70).

Regarding claim 56, Taylor discloses a method comprising disposing the barrier layer over the cathode structure. In regards of the limitation wherein the barrier layer is configured to prevent substantial penetration of electrons from the cathode emitters into the cathode substrate, Taylor discloses a silicon dioxide barrier layer having a thickness of 50nm, it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents penetration of electrons as evidenced by Taylor's disclosure of all the claimed structural limitations.

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Regarding claim 57, Taylor discloses a method wherein the barrier layer is made of silicon dioxide and has a thickness of 50nm, it is the Examiner's position that the barrier layer material and thickness disclosed by Taylor inherently prevents substantial penetration of electrons from the cathode emitters into the cathode structure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 52 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 5,536,993) in view of Kawate et al. (US 5,770,918).

Regarding claims 52 and 54, Taylor is silent in respect to the type of glass used for the cathode substrate, specifically high-sodium glass. However, in the same field of endeavor, Kawate discloses the general suitability of several types of glass for the use as cathode substrates in display devices, inclusive soda-lime glass (Column 7, lines 27-29), which is well known for its high-sodium contents. Accordingly, one of ordinary skills in the art would consider the use of soda-lime glass for the material of the cathode substrate as an obvious matter of design choice, since the selection of a known material on the basis of its suitability for the intended use would be considered within the level of skills in the art as evidenced by Kawate.

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Claims 41 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 5,536,993) in view of Borel et al. (US 4,857,161).

Regarding claims 41 and 58, Taylor discloses the method as claimed and further comprising the barrier layer made of silicon dioxide and having a thickness of 50nm, Taylor acknowledges the use of the barrier layer for enhancing the adhesion of a subsequent layer to the substrate and to limit the diffusion of impurities from the substrate to the subsequent layer (Column 6, lines 45-49). Taylor fails to disclose the limitation of the barrier layer having a thickness of approximately 100 nm. However, in the same field of endeavor, Borel discloses a method of manufacturing an FED device further comprising the step of disposing a substantially continuous barrier layer (7) of substantially uniform thickness disposed over the one side of the cathode substrate, the barrier layer having a thickness substantially of 100 nm and comprising silicon dioxide (Column 4, lines 1-8) in order to improve the adhesion of the cathode conductors to the substrate (Column 2, lines 49-53). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the barrier layer having a thickness of approximately 100nm as disclosed by Borel in the method of Taylor in order to improve the adhesion of the cathode conductors to the substrate, since both references acknowledge the use of an intermediate barrier layer and its advantages in the manufacturing of FED devices.

Response to Arguments

Applicant's arguments filed October 14, 2003 have been fully considered but they are not persuasive.

In response to applicant's arguments that the prior art of record, Taylor et al. (US 5,536,993), fails to teach or suggest the limitation of "the barrier layer is configured to prevent

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migration of contaminants into an active region of the FED device", the Examiner respectfully disagree. Taylor discloses "[A] insulating layer **64** may be included to enhance the adhesion of a subsequent layer to substrate **66** and to limit diffusion of impurities from substrate **66** to the subsequent layer", Column 6, lines 45-49. It is the position of the Examiner that by limiting the diffusion of impurities from substrate **66** to any subsequent layer, also a migration of contaminants into an active region of the FED device is prevented.

Accordingly, Taylor discloses all the limitation as claimed in the instant application and the rejection of claims 36, 37, 39-44 and 52-58 as stated above are deemed proper.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MS 1/6/04
Mariceli Santiago
Patent Examiner
Art Unit 2879

Kenneth / Ramsey
Kenneth / Ramsey
Patent Examiner
Art Unit 2879